

Translation

PATENT COOPERATION TREATY

PCT/EP2003/010788



PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 97 750/M/nu	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP2003/010788	International filing date (day/month/year) 29 September 2003 (29.09.2003)	Priority date (day/month/year) 30 September 2002 (30.09.2002)
International Patent Classification (IPC) or national classification and IPC B01J 29/04, 37/08, B01D 53/94		
Applicant IKO MINERALS GMBH		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 7 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 27 March 2004 (27.03.2004)	Date of completion of this report 01 March 2005 (01.03.2005)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International Application No.

PCT/EP2003/010788

## I. Basis of the report

### 1. With regard to the elements of the international application:\*

- ☐ the international application as originally filed
- ☒ the description:  
 pages \_\_\_\_\_ 5-18 \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_ 1-4 \_\_\_\_\_, filed with the letter of \_\_\_\_\_ 21 January 2005 (21.01.2005)
- ☒ the claims:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, as amended (together with any statement under Article 19  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_ 1-15 \_\_\_\_\_, filed with the letter of \_\_\_\_\_ 21 January 2005 (21.01.2005)
- ☒ the drawings:  
 pages \_\_\_\_\_ 1/1 \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the sequence listing part of the description:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

### 2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item. These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

### 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

### 4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/fig \_\_\_\_\_

### 5. ☒ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International Application No.  
PCT/EP 03/10788

## I. Basis of the report

1. This report has been drawn on the basis of *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.)*:

The amendment to the description, annex page 3, lines 2-3, submitted with the letter of 21 January 2005 is not directly derivable from D4.

This report has been established without taking this amendment into account.

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.  
PCT/EP 03/10788

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. Statement

Novelty (N)	Claims	1-15	YES
	Claims		NO
Inventive step (IS)	Claims	1-15	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-15	YES
	Claims		NO

### 2. Citations and explanations

This report makes reference to the following documents:

D1: LI, W. ET AL.: "Selective catalytic reduction of nitric oxide by ethylene in the presence of oxygen over Cu<sup>2+</sup> ion-exchanged pillared clays" APPLIED CATALYSIS B: ENVIRONMENTAL, vol. 11, 1997, pages 347-363, XP002277190

D2: YANG, R. T.; LI, W: "Ion-Exchanged Pillared Clays: A New Class of Catalysts for Selective Catalytic Reduction of NO by Hydrocarbons and by Ammonia" JOURNAL OF CATALYSIS, vol. 155, 1995, pages 414-417, XP002277191

D3: SADYKOV VLADISLAV A ET AL: "Nanocomposites based upon alumina and zirconia pillared clays loaded with transition metal cations and clusters of precious metals: synthesis, properties and catalysis of NOx selective reduction by hydrocarbons" THE 1999 MRS FALL MEETING - SYMPOSIUM F 'NANOPHASE AND NANOCOMPOSITE MATERIALS III' BOSTON, MA, USA NOV 29-DEC 2 1999, vol. 581, 29 November 1999 (1999-11-29), pages 435-440, XP008029911 Mater Res Soc Symp Proc; Materials Research Society Symposium - Proceedings 2000 Materials Research Society, Warrendale, PA, USA

D4: CROCKER M. ET AL.: 'Preparation of acidic forms of montmorillonite clay via solid-state ion-exchange

reactions" CATALYSIS LETTERS, vol. 15, 1992, pages 339-345, XP002277192

D5: PATENT ABSTRACTS OF JAPAN, vol. 1996, no. 09, 30 September 1996 (1996-09-30) & JP 08 117597 A (BABCOCK HITACHI KK), 14 May 1996 (1996-05-14)

1. The subject matter of claims 1 to 15 is novel over D1 to D5.

2.1 The present application meets the requirements of PCT Article 33(1) because the subject matter of claims 1 to 15 appears to involve an inventive step within the meaning of PCT Article 33(3).

The subject matter of independent claim 1 differs from D1 to D3 in that ion exchange and calcination take place simultaneously by means of heating.

This feature leads to a simpler production method.

D1 to D3 do not contain anything that would suggest that the catalysts can be produced more simply in this way.

Although D4 describes ion exchange by means of heating (wherein possibly very small crystallites are formed, see page 342: "from which it may be concluded ... XRD"), it does not describe simultaneous calcination.

Since solid phase ion exchange can be carried out in a number of ways, replacing liquid phase ion exchange by solid phase ion exchange at calcination temperatures is not an obvious solution to the problem of simplifying the production method.